



Network Quality and Reliability of Supply Code

2018/19 Performance Report

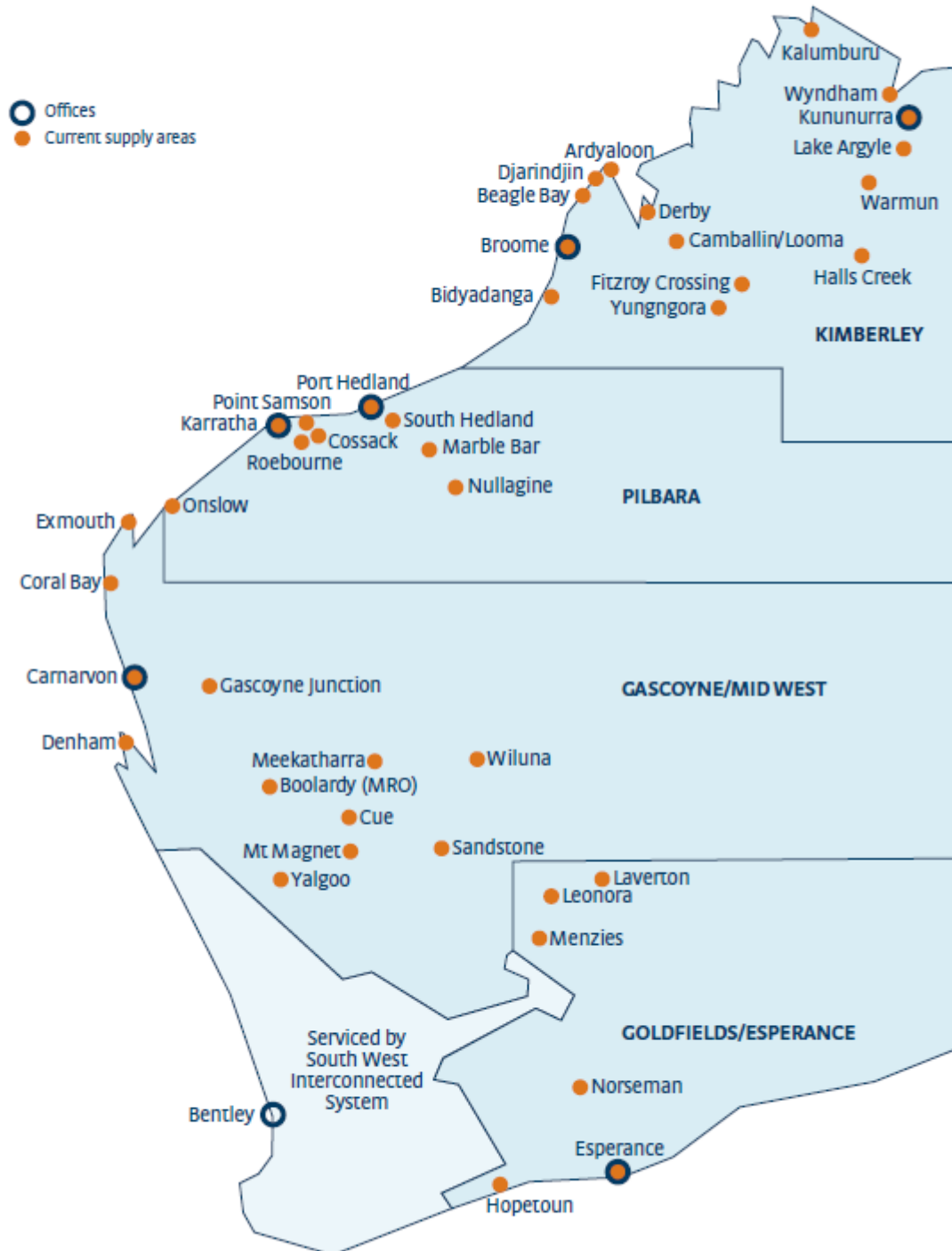
Prepared by: Asset Services

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Service area



1. INTRODUCTION

This report has been produced to meet the requirements of the Electricity Industry (Network Quality and Reliability of Supply) Code 2005, Schedule 1 – Information to be published.

To assist in meeting reporting requirements the Economic Regulation Authority Western Australia (ERA WA) publishes the Electricity Distribution Licence Performance Reporting Handbook which specifies measures to be reported. The report is prepared in accordance with Schedule 1 of the Code, however as Horizon Power is a vertically integrated business (responsible for generation, transmission and distribution) reliability data includes generation and transmission outages.

2. AUDIT REQUIREMENTS

Division 3 of the Electricity Industry (Network Quality and Reliability of Supply) Code 2005 requires that Horizon Power arrange for an independent expert to audit, and report on the operation of the systems that Horizon Power has in place for monitoring its compliance with the code.

In 2017, the Minister for Energy removed the requirement for licence holders, such as Horizon Power, to annually engage an independent expert to audit and report on the operation of the systems in place for monitoring compliance with legislated electricity quality and reliability standards. The audit period was extended to three yearly, with the next audit due for the 2019/20 report.

3. SCHEDULE 1 - INFORMATION TO BE PUBLISHED:

Clause 4 and 10 – Voltage Fluctuations and Harmonics

Clause 4(a) Number of breaches of each provision of the Code:

Quality of Supply	2017/18	2018/19
Voltage fluctuations	0	0
Harmonics	0	0

Clause 4(b) Remedial action taken for each provision:

Voltage Fluctuations

Location	Action Taken
N/A	N/A

Harmonics

Location	Action Taken
N/A	N/A

N/A = Not Applicable.

Continuous monitoring of voltage and frequency fluctuations is done at the substation busbar. Temporary power quality monitoring equipment is installed on the network for specific problem monitoring in response to a customer power quality complaint.

Clause 5 - Significant interruptions to small use customers.

Clause Description	2017/18	2018/19
Clause 5(a) Number of premises that experienced interruptions greater than 12 hours continuous	742	1380
Clause 5(b) Number of premises that experienced more than 16 interruptions.	79	120

Detailed analysis of interruptions where duration is greater than 12 hours (720 minutes) continuously for 2018/19

System	Duration (Minutes)	Premises	Start Date	Cause Description	Incident Category
Ardyaloon	3570	1	17/09/2018	Equipment Failure	Potential Neutral Problem - AMI
Bidyadanga	5802	1	9/08/2018	Equipment Failure	Low Hanging Service Wire
Broome	5355	1	26/07/2018	Equipment Failure	Intermittent Power
Broome	1565	348	23/12/2018	Equipment Failure	Feeder Trip
Broome	2173	1	9/04/2019	Vandalism or Willful Damage	Meter Box Damaged
Broome	2806	1	15/06/2019	Machine or Tool	Underground Dome Damaged
Broome	1121	1	19/06/2019	Machine or Tool	Pole Down
Carnarvon	1176	1	18/08/2018	Equipment Failure	Part Power
Carnarvon	1174	2	18/08/2018	Emergency Outage For Hazard	Switch Isolation
Carnarvon	2211	9	4/03/2019	Equipment Failure	Recloser Trip
Carnarvon	16209	9	26/03/2019	Equipment Failure	Switch Isolation
Cue	1556	1	18/01/2019	Vehicle	Underground Dome Damaged
Denham	1620	1	5/03/2019	Insect	No Power
Denham	1176	1	19/04/2019	Equipment Failure	Part Power
Denham	1290	1	11/05/2019	Equipment Failure	Pole Leaning
Derby	2541	1	11/07/2018	Vandalism or Willful Damage	Underground Dome Damaged
Derby	13993	1	30/12/2018	Vegetation	Debris On Service Wire
Derby	23398	1	31/12/2018	Equipment Failure	Electric Shock
Derby	2979	1	21/04/2019	Equipment Failure	Low Hanging Service Wire
Djarindjin	2406	1	19/03/2019	Equipment Failure	No Power
Esperance	720	1	11/07/2018	Equipment Failure	Pole Broken/Damaged
Esperance	826	1	16/07/2018	Wind or Wind Bourne Debris	No Power
Esperance	1612	2	4/08/2018	Lightning	Switch Isolation
Esperance	1399	1	7/08/2018	Equipment Failure	Sectionalizer Trip
Esperance	928	27	9/08/2018	Lightning	Drop Out Fuse Trip
Esperance	916	1	9/08/2018	Equipment Failure	Transformer On A Pole Damaged
Esperance	3306	1	10/08/2018	Equipment Failure	Electric Shock
Esperance	7376	1	11/08/2018	Equipment Failure	No Power
Esperance	1644	1	14/08/2018	Equipment Failure	Miscellaneous Hazard
Esperance	1155	5	14/08/2018	Equipment Failure	Switch Isolation
Esperance	1751	1	29/08/2018	Lightning	No Power
Esperance	2161	17	7/09/2018	Unknown	Drop Out Fuse Trip
Esperance	12269	1	22/09/2018	Pollution	Pole Arcing

System	Duration (Minutes)	Premises	Start Date	Cause Description	Incident Category
Esperance	1513	2	25/09/2018	Equipment Failure	Planned HVN Incident
Esperance	1483	18	5/10/2018	Lightning	Sectionaliser Trip
Esperance	869	18	5/10/2018	Lightning	Recloser Trip
Esperance	3973	9	11/10/2018	Equipment Failure	Drop Out Fuse Trip
Esperance	789	5	13/10/2018	Unknown	Drop Out Fuse Trip
Esperance	842	1	25/10/2018	Unknown	No Power
Esperance	4043	1	26/10/2018	Equipment Failure	Miscellaneous Hazard
Esperance	2449	33	7/11/2018	Wind or Wind Bourne Debris	Recloser Trip
Esperance	1002	8	10/11/2018	Emergency Outage For Hazard	Planned HVN Incident
Esperance	1124	1	15/11/2018	Vehicle	Street Wire Down
Esperance	897	1	22/11/2018	Equipment Failure	No Power
Esperance	3884	1	7/12/2018	Lightning	Miscellaneous Hazard
Esperance	1164	1	19/12/2018	Vehicle	Meter Box Damaged
Esperance	1851	1	3/01/2019	Plan Outage or Disconnection	Planned HVN Incident
Esperance	876	1	9/01/2019	Equipment Failure	No Power
Esperance	1532	4	27/02/2019	Pollution	Recloser Trip
Esperance	3260	24	28/02/2019	Lightning	Recloser Trip
Esperance	1451	27	1/03/2019	Lightning	Recloser Trip
Esperance	2393	17	1/03/2019	Lightning	Recloser Trip
Esperance	934	1	11/03/2019	Machine or Tool	Pole Hit
Esperance	907	1	11/03/2019	Machine or Tool	No Power
Esperance	859	1	11/03/2019	Human Error	No Power
Esperance	839	1	11/03/2019	Machine or Tool	No Power
Esperance	1964	1	21/03/2019	Wind or Wind Bourne Debris	Planned HVN Incident
Esperance	1122	6	21/03/2019	Lightning	Drop Out Fuse Trip
Esperance	1336	1	21/03/2019	Lightning	No Power
Esperance	1907	20	10/04/2019	Unknown	Recloser Trip
Esperance	1712	1	13/05/2019	Equipment Failure	No Power
Esperance	1258	1	15/05/2019	Machine or Tool	Low Hanging Street Wire
Esperance	3653	1	18/05/2019	Equipment Failure	Miscellaneous Hazard
Exmouth	1004	1	2/08/2018	Vehicle	Underground Dome Damaged
Exmouth	721	1	28/08/2018	Bird	Part Power
Fitzroy Crossing	4094	1	6/07/2018	Vandalism or Willful Damage	No Power
Fitzroy Crossing	1117	1	15/08/2018	Vehicle	Underground Dome Damaged
Fitzroy Crossing	834	1	13/10/2018	Unknown	No Power
Fitzroy Crossing	1197	1	8/11/2018	Wind or Wind Bourne Debris	Debris On Service Wire
Fitzroy Crossing	1761	1	1/01/2019	Equipment Failure	Potential Neutral Problem - AMI
Fitzroy Crossing	1475	1	28/05/2019	Vandalism or Willful Damage	No Power
Halls Creek	1789	1	4/09/2018	Plan Outage or Disconnection	Planned HVN Incident
Halls Creek	908	1	21/10/2018	Vehicle	Pole Broken/Damaged
Halls Creek	943	81	21/10/2018	Vehicle	LV Fuse Trip
Halls Creek	913	1	21/10/2018	Vehicle	No Power
Halls Creek	1150	1	13/01/2019	Fire (Not Pole Top Fire)	Bushfire

System	Duration (Minutes)	Premises	Start Date	Cause Description	Incident Category
Halls Creek	1705	1	13/02/2019	Equipment Failure	No Power
Hopetoun	772	1	20/07/2018	Equipment Failure	No Power
Hopetoun	778	1	22/08/2018	Lightning	No Power
Hopetoun	787	1	14/10/2018	Bird	No Power
Hopetoun	887	1	23/01/2019	Lightning	No Power
Hopetoun	1962	23	8/04/2019	Lightning	Feeder Trip
Hopetoun	5723	1	1/06/2019	Equipment Failure	Part Power
Kalumburu	1937	1	26/07/2018	PQI - Default Code	Potential Neutral Problem - AMI
Kalumburu	1024	1	24/06/2019	Vehicle	Underground Dome Damaged
Karratha	12884	1	1/07/2018	Machine or Tool	Pole Hit
Karratha	4618	1	5/10/2018	Equipment Failure	Potential Neutral Problem - AMI
Karratha	808	1	8/12/2018	Vehicle	Pole Hit
Karratha	1425	1	16/12/2018	Equipment Failure	No Power
Karratha	1413	1	7/01/2019	Equipment Failure	Feeder Trip
Karratha	1473	1	17/01/2019	Unknown	No Power
Karratha	6931	1	24/01/2019	Equipment Failure	Part Power
Karratha	1731	8	5/03/2019	Pollution	Feeder Trip
Karratha	935	1	10/03/2019	Equipment Failure	Part Power
Karratha	3493	14	24/03/2019	Wind or Wind Bourne Debris	Recloser Trip
Karratha	28530	140	24/03/2019	Wind or Wind Bourne Debris	Feeder Trip
Karratha	20295	17	24/03/2019	Lightning	Feeder Trip
Karratha	2880	1	24/03/2019	Wind or Wind Bourne Debris	Low Hanging Service Wire
Karratha	16058	2	24/03/2019	Wind or Wind Bourne Debris	Feeder Trip
Karratha	5514	1	25/03/2019	Wind or Wind Bourne Debris	Underground Dome Damaged
Karratha	4069	17	25/03/2019	Unknown	Feeder Trip
Karratha	2654	11	26/03/2019	Equipment Failure	RMU Fuse Trip
Karratha	2650	1	26/03/2019	Unknown	No Power
Karratha	3080	1	28/03/2019	Unknown	No Power
Karratha	1201	1	31/03/2019	Vehicle	Underground Dome Damaged
Karratha	1073	2	7/05/2019	Emergency Outage For Hazard	Planned HVN Incident
Kununurra	4191	1	10/07/2018	Vandalism or Willful Damage	Miscellaneous Hazard
Kununurra	1373	1	16/07/2018	Water Infiltration or Flooded Equipment	Miscellaneous Non Hazard
Kununurra	1475	1	17/07/2018	Equipment Failure	Miscellaneous Non Hazard
Kununurra	12497	1	28/08/2018	Equipment Failure	No Power
Kununurra	3673	1	23/09/2018	Fire (Not Pole Top Fire)	No Power
Kununurra	4058	1	22/10/2018	PQI - Default Code	SFW PQI Voltage Fluctuation
Kununurra	4020	1	22/10/2018	Equipment Failure	No Power
Kununurra	2853	1	1/12/2018	Lightning	Part Power
Kununurra	4302	1	22/12/2018	Lightning	Recloser Trip
Kununurra	2413	43	9/03/2019	Lightning	Recloser Trip
Kununurra	11369	1	18/04/2019	Vandalism or Willful Damage	No Power
Laverton	721	1	26/09/2018	Emergency Outage For Hazard	Planned HVN Incident

System	Duration (Minutes)	Premises	Start Date	Cause Description	Incident Category
Laverton	787	5	3/11/2018	Lightning	Recloser Trip
Laverton	2435	1	1/12/2018	Human Error	Miscellaneous Hazard
Laverton	2008	5	3/12/2018	Lightning	Recloser Trip
Laverton	3249	20	7/04/2019	Equipment Failure	Feeder Trip
Leonora	1914	1	11/09/2018	Equipment Failure	Low Hanging Service Wire
Leonora	810	1	3/11/2018	Lightning	No Power
Leonora	3012	27	9/12/2018	Wind or Wind Bourne Debris	Feeder Trip
Leonora	5489	7	9/12/2018	Wind or Wind Bourne Debris	Feeder Trip
Leonora	7798	23	9/12/2018	Wind or Wind Bourne Debris	Feeder Trip
Leonora	4556	1	2/02/2019	Equipment Failure	Potential Neutral Problem - AMI
Looma	4698	106	23/01/2019	Lightning	Feeder Trip
Meekatharra	5632	1	13/08/2018	PQI - Default Code	SFW PQI High Volts
Meekatharra	774	1	12/12/2018	Human Error	No Power
Meekatharra	3191	8	14/03/2019	Equipment Failure	Recloser Trip
Norseman	813	1	14/04/2019	Vehicle	Pole Down
Nullagine	898	17	9/12/2018	Lightning	Drop Out Fuse Trip
Nullagine	1596	1	10/12/2018	Lightning	No Power
Nullagine	1132	1	14/03/2019	Wind or Wind Bourne Debris	Part Power
Onslow	4185	1	19/11/2018	Lightning	Electric Shock
Onslow	2258	1	10/12/2018	Human Error	Meter Box Damaged
Port Hedland	5533	1	17/09/2018	Vehicle	Feeder Trip
Port Hedland	1190	1	10/12/2018	Machine or Tool	Underground Dome Damaged
Port Hedland	8637	25	2/02/2019	Unknown	Recloser Trip
Port Hedland	916	1	12/03/2019	Lightning	No Power
Port Hedland	14575	30	24/03/2019	Wind or Wind Bourne Debris	Feeder Trip
Port Hedland	1626	1	24/03/2019	Unknown	Part Power
Port Hedland	1539	1	25/03/2019	Machine or Tool	No Power
Port Hedland	8140	1	26/03/2019	Vehicle	Underground Dome Damaged
Port Hedland	1133	1	1/05/2019	Vehicle	Underground Dome Damaged
Port Hedland	2373	2	7/06/2019	Equipment Failure	Feeder Trip
Port Hedland	1585	1	24/06/2019	Equipment Failure	Underground Dome Damaged
Wyndham	1198	1	16/07/2018	Equipment Failure	Pole Leaning
Wyndham	2823	1	23/10/2018	Vegetation	Part Power
Yungngora	1882	30	15/12/2018	Equipment Failure	Feeder Trip
		1,380	Number of Interruptions* = 152		

*Interruptions listed are beyond the control of the customer.

Customer interruptions greater than 12 hours continuously that were due to significant events (cyclones, severe storms, fire & floods) that Horizon Power systems experienced in 2018/19.

Power System	Significant Event Dates	Event
Leonora	9 December 2018	Cyclonic Rated Storms

Clause 6 and 10 - Total number of Quality of Supply complaints received

2017/18	2018/19
27	76

Clause 7 and 10 - Number of customer complaints in each discrete area:

Discrete Area	2017/18	2018/19
NWIS	4	7
Ardayaloon		
Beagle Bay		
Bidyadanga		
Broome	4	3
Carnarvon	2	1
Coral Bay		
Cue		
Denham	1	
Derby		
Djarindjin		
Esperance	5	9
Exmouth	4	
Fitzroy Crossing		
Gascoyne Junction		
Halls Creek	2	15
Hopetoun	3	2
Kalumburu		
Kununurra	1	
Lake Argyle		
Laverton		3
Leonora		6
Looma		4
Marble Bar		
Meekatharra		
Menzies		
Mount Magnet		
Norseman		
Nullagine		1
Onslow		
Sandstone		
Warmun	1	
Wiluna		
Wyndham		
Yalgoo		
Yungngora		25
Horizon Power Total	27	76

At the request of the ERA, Horizon Power has revised the methodology for collecting the 2018/19 data in the above table to reflect the number of customer complaints where Part 2 or an instrument made under section 14(3) of the Network Quality and Reliability of Supply Code 2005 has not been, or is not being, complied with.

Clause 8 and 10 - Total amount spent addressing Power Quality and Reliability complaints.

2017/18	2018/19
\$292,616	\$374,500

Clause 9 and 10 - Payments to customers for failure to meet certain standards

The number and total payments made to customers (who applied) for failure to give required notice of planned interruption.

2017/18		2018/19	
Number	Cost	Number	Cost
0	\$0	15	\$900

The number and total payments made to customers (who applied) for supply interruptions exceeding 12 hours.

2017/18		2018/19	
Number	Cost	Number	Cost
10	\$800	52	\$4,160

Clause 11(a), 12 and 13 - Average Length of Interruption of Supply to Customer Premises in Minutes²

System	2015/16	2016/17	2017/18	2018/19	Average
NWIS ¹	64.89	91.22	53.65	159.53	92.32
Ardyaloon	38.54	18.98	9.75	0.00	16.82
Beagle Bay	85.60	217.17	142.52	173.30	154.65
Bidyadanga	261.48	183.69	144.01	139.78	182.24
Broome	68.69	56.60	116.09	191.07	108.11
Carnarvon	85.07	101.75	110.63	51.25	87.17
Coral Bay	438.14	67.00	37.25	14.08	139.12
Cue	85.15	109.19	744.85	83.69	255.72
Denham	44.38	137.26	27.55	36.24	61.36
Derby	70.05	77.37	92.75	153.68	98.46
Djarindjin	113.91	0.00	145.32	119.75	94.74
Esperance	106.90	74.56	138.38	114.39	108.56
Exmouth	115.84	72.64	136.49	192.95	129.48
Fitzroy Crossing	30.54	805.04	166.14	190.43	298.04
Gascoyne Junction	18.60	35.40	81.26	207.64	85.72
Halls Creek	102.02	121.59	73.70	233.86	132.79
Hopetoun	140.62	232.25	116.70	136.26	156.46
Kalumburu	180.50	101.76	12.68	27.51	80.61
Kununurra	53.28	60.83	43.19	52.91	52.55
Lake Argyle	97.50	201.80	215.13	106.65	155.27
Laverton	168.28	149.89	116.39	159.62	148.55
Leonora	82.20	92.67	148.31	212.97	134.04
Looma	129.97	134.64	272.34	427.66	241.15
Marble Bar	15.35	40.80	32.50	113.38	50.51
Meekatharra	27.59	162.09	274.63	113.60	144.48
Menzies	53.00	176.86	39.92	106.43	94.05
Mount Magnet	9.95	52.03	50.18	67.84	45.00
Norseman	63.46	142.71	149.47	84.88	110.13
Nullagine	0.00	0.00	152.12	476.27	157.10
Onslow	77.20	93.05	82.99	32.82	71.51
Sandstone	0.00	178.64	203.00	172.33	138.49
Warmun	5.78	238.24	134.28	0.00	94.58
Wiluna	4.53	313.13	36.22	41.14	98.76
Wyndham	122.36	23.46	35.53	45.90	56.81
Yalgoo	80.21	2.00	2.42	69.42	38.51
Yungngora	58.34	1564.05	41.66	269.49	483.38
Horizon Power Total	79.83	90.94	101.22	120.50	98.12

¹NWIS – North West Interconnected System as per Clause 1 – Schedule 1

²Corresponds to Customer Average Interruption Duration Index (CAIDI)

Clause 11(b), 12 and 13 - Average Number of Interruptions of Supply to Customer Premises³

System	2015/16	2016/17	2017/18	2018/19	Average
NWIS ¹	0.83	0.74	0.74	0.68	0.75
Ardyaloon	3.17	1.40	1.81	0.00	1.60
Beagle Bay	1.26	0.05	1.37	3.37	1.51
Bidyadanga	2.07	3.93	5.24	0.34	2.89
Broome	5.29	0.80	1.22	1.58	2.22
Carnarvon	2.56	4.64	1.58	4.71	3.37
Coral Bay	1.75	0.10	3.60	5.82	2.82
Cue	2.25	3.11	0.87	1.12	1.84
Denham	7.10	2.28	4.63	3.55	4.39
Derby	2.91	1.65	1.05	2.29	1.98
Djarindjin	0.95	0.00	1.51	2.05	1.13
Esperance	6.65	4.40	2.60	2.91	4.14
Exmouth	2.08	4.60	1.92	1.45	2.51
Fitzroy Crossing	2.37	1.29	0.27	1.53	1.36
Gascoyne Junction	1.21	1.63	1.47	0.84	1.29
Halls Creek	1.62	1.37	0.96	0.82	1.19
Hopetoun	2.08	0.64	1.53	3.64	1.97
Kalumburu	3.19	5.60	0.88	2.63	3.07
Kununurra	11.33	10.57	2.08	3.10	6.77
Lake Argyle	1.88	2.80	0.94	6.44	3.01
Laverton	1.69	4.36	4.25	3.47	3.44
Leonora	3.76	3.79	2.99	7.44	4.50
Looma	1.37	0.40	0.41	3.28	1.37
Marble Bar	8.27	3.68	1.09	1.40	3.61
Meekatharra	1.46	0.02	0.73	1.16	0.84
Menzies	0.39	1.24	0.34	4.65	1.65
Mount Magnet	2.88	7.76	4.02	3.21	4.47
Norseman	2.88	1.37	3.17	4.14	2.89
Nullagine	0.00	0.00	1.28	0.63	0.48
Onslow	7.32	8.66	0.67	2.64	4.82
Sandstone	0.00	1.35	0.06	0.17	0.40
Warmun	0.96	0.67	1.80	0.00	0.86
Wiluna	0.84	1.51	3.21	7.71	3.32
Wyndham	3.86	3.91	3.26	1.51	3.14
Yalgoo	1.15	0.35	0.61	1.80	0.98
Yungngora	4.53	6.65	2.88	2.41	4.12
Horizon Power Total	3.55	2.58	1.50	1.94	2.39

¹NWIS – North West Interconnected System as per Clause 1 – Schedule 1

³Corresponds to System Average Interruption Frequency Index (SAIFI)

Clause 11(c), 12 and 13 - Average Percentage Of Time That Electricity Has Been Supplied To Customer Premises.

System %	2015/16	2016/17	2017/18	2018/19	Average
NWIS ¹	99.99	99.98	99.99	99.97	99.98
Ardyaloon	99.99	100.00	100.00	100.00	100.00
Beagle Bay	99.98	99.96	99.97	99.97	99.97
Bidyadanga	99.95	99.97	99.97	99.97	99.97
Broome	99.99	99.99	99.98	99.96	99.98
Carnarvon	99.98	99.98	99.98	99.99	99.98
Coral Bay	99.92	99.99	99.99	100.00	99.97
Cue	99.98	99.98	99.86	99.98	99.95
Denham	99.99	99.97	99.99	99.99	99.99
Derby	99.99	99.99	99.98	99.97	99.98
Djarindjin	99.98	100.00	99.97	99.98	99.98
Esperance	99.98	99.99	99.97	99.98	99.98
Exmouth	99.98	99.99	99.97	99.96	99.98
Fitzroy Crossing	99.99	99.85	99.97	99.96	99.94
Gascoyne Junction	100.00	99.99	99.98	99.96	99.98
Halls Creek	99.98	99.98	99.99	99.96	99.97
Hopetoun	99.97	99.96	99.98	99.97	99.97
Kalumburu	99.97	99.98	100.00	99.99	99.98
Kununurra	99.99	99.99	99.99	99.99	99.99
Lake Argyle	99.98	99.96	99.96	99.98	99.97
Laverton	99.97	99.97	99.98	99.97	99.97
Leonora	99.98	99.98	99.97	99.96	99.97
Looma	99.98	99.97	99.95	99.92	99.95
Marble Bar	100.00	99.99	99.99	99.98	99.99
Meekatharra	99.99	99.97	99.95	99.98	99.97
Menzies	99.99	99.97	99.99	99.98	99.98
Mount Magnet	100.00	99.99	99.99	99.99	99.99
Norseman	99.99	99.97	99.97	99.98	99.98
Nullagine	100.00	100.00	99.97	99.91	99.97
Onslow	99.99	99.98	99.98	99.99	99.99
Sandstone	100.00	99.97	99.96	99.97	99.97
Warmun	100.00	99.95	99.97	100.00	99.98
Wiluna	100.00	99.94	99.99	99.99	99.98
Wyndham	99.98	100.00	99.99	99.99	99.99
Yalgoo	99.98	100.00	100.00	99.99	99.99
Yungngora	99.99	99.70	99.99	99.95	99.91
Horizon Power Total	99.98	99.98	99.98	99.98	99.98

¹NWIS – North West Interconnected System as per Clause 1 – Schedule 1

Clause 11(d), 12 and 13 - Average Total Length of All Interruptions of Supply to Customer Premises in Minutes⁴

System	2015/16	2016/17	2017/18	2018/19	Average
NWIS ¹	54	68	40	108	67
Ardyaloon	122	27	18	0	42
Beagle Bay	108	10	196	583	224
Bidyadanga	540	721	754	48	516
Broome	364	45	142	302	213
Carnarvon	217	472	175	241	277
Coral Bay	767	6	134	82	247
Cue	192	339	645	93	317
Denham	315	313	128	129	221
Derby	204	127	98	352	195
Djarindjin	109	0	219	245	143
Esperance	711	328	360	333	433
Exmouth	241	334	262	280	279
Fitzroy Crossing	72	1038	45	290	361
Gascoyne Junction	23	58	119	174	94
Halls Creek	166	166	71	191	148
Hopetoun	292	148	179	496	279
Kalumburu	576	569	11	72	307
Kununurra	603	643	90	164	375
Lake Argyle	183	565	202	687	409
Laverton	284	653	495	554	496
Leonora	309	351	444	1586	672
Looma	178	54	113	1404	437
Marble Bar	127	150	36	159	118
Meekatharra	40	4	200	132	94
Menzies	21	219	14	494	187
Mount Magnet	29	404	202	218	213
Norseman	182	195	474	351	301
Nullagine	0	0	194	298	123
Onslow	565	806	56	87	378
Sandstone	0	242	12	30	71
Warmun	6	160	242	0	102
Wiluna	4	474	116	317	228
Wyndham	472	92	116	69	187
Yalgoo	92	1	1	125	55
Yungngora	265	10403	120	650	2859
Horizon Power Total	284	234	152	234	226

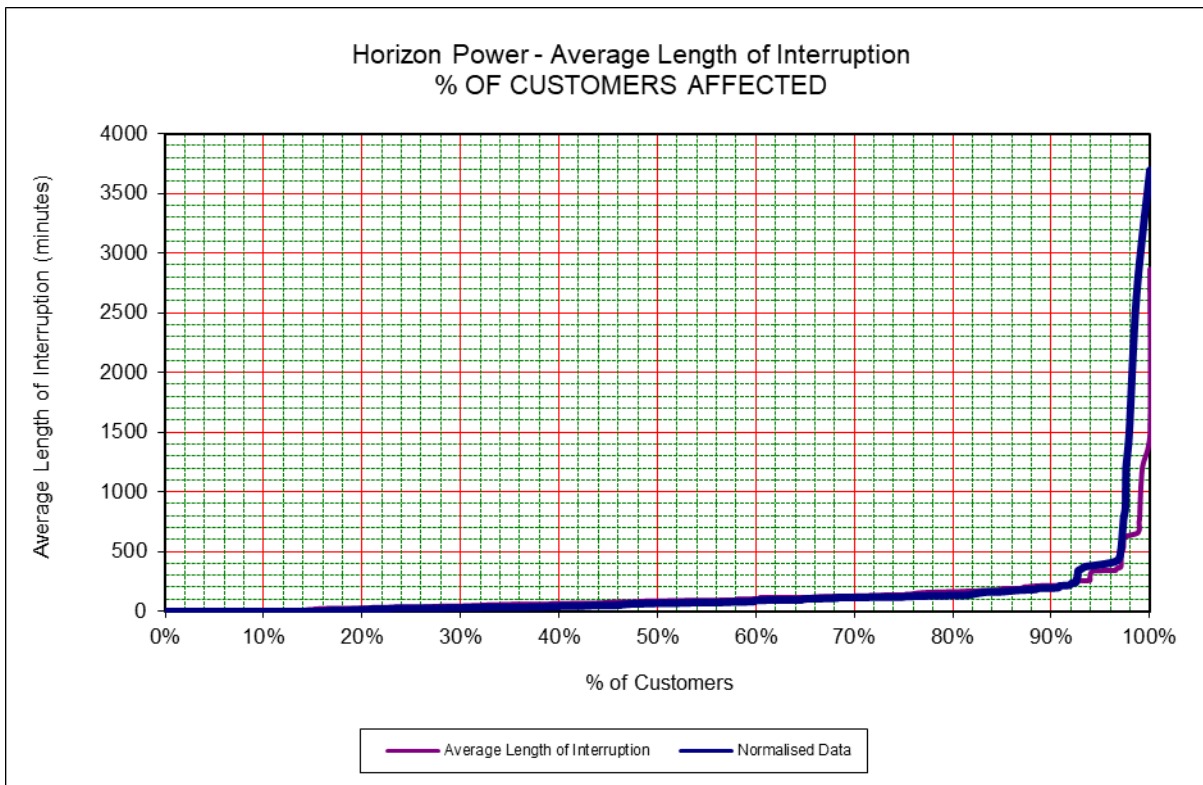
¹NWIS – North West Interconnected System as per Clause 1 - Schedule 1

⁴Corresponds to System Average Interruption Duration Index (SAIDI)

Clause 14(a) - Horizon Power - Average Length of Interruption - Frequency Distribution

Percentile	Minutes
25 th	< 37.94
50 th	< 89.42
75 th	< 140.80
90 th	< 219.58
95 th	< 341.33
98 th	< 639.46
100 th	< 2865.47

Clause 15 – Average Length of Interruption - Frequency Graph.

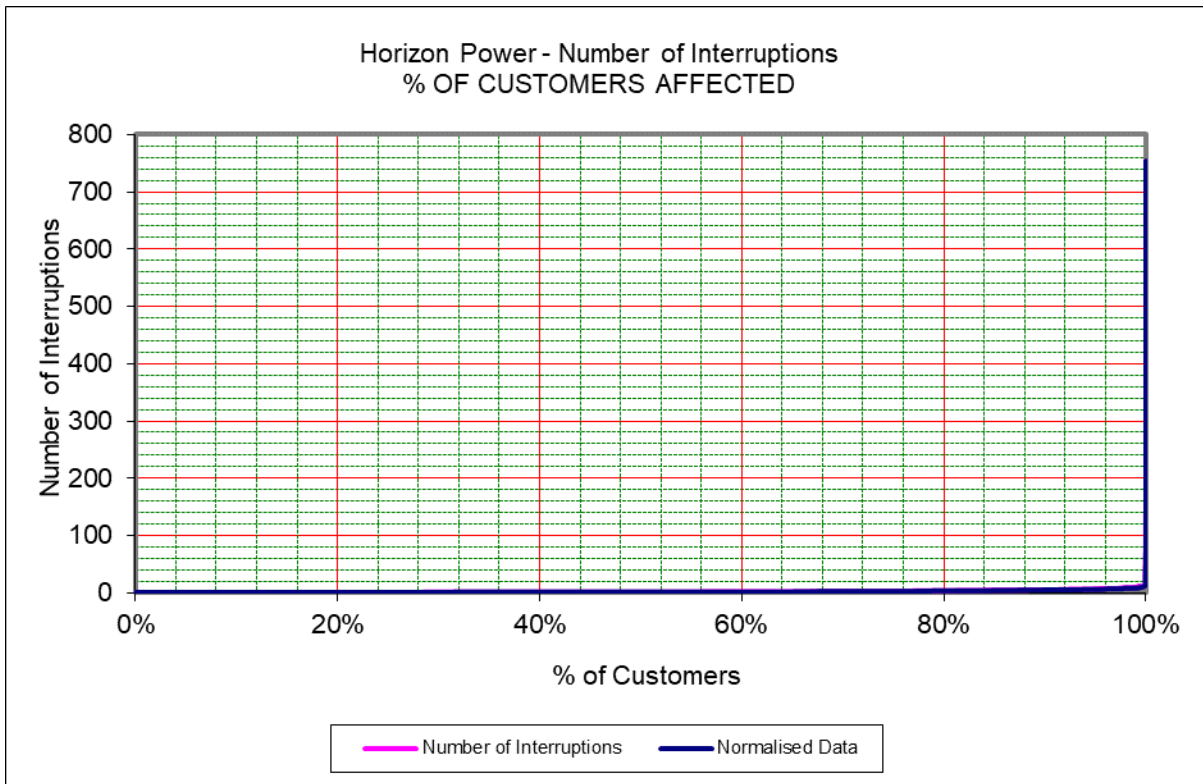


During the period 01/07/2018 to 30/06/2019 of those customers who experienced an interruption, 35% had an interruption of less than 60 minutes.

Clause 14(b) - Horizon Power - Number of Interruptions - Frequency Distribution

Percentile	Interruptions
25 th	< 0.18
50 th	< 0.99
75 th	< 2.40
90 th	< 4.81
95 th	< 6.30
98 th	< 8.57
100 th	< 753.00

Clause 15 – Number of Interruptions - Frequency Graph

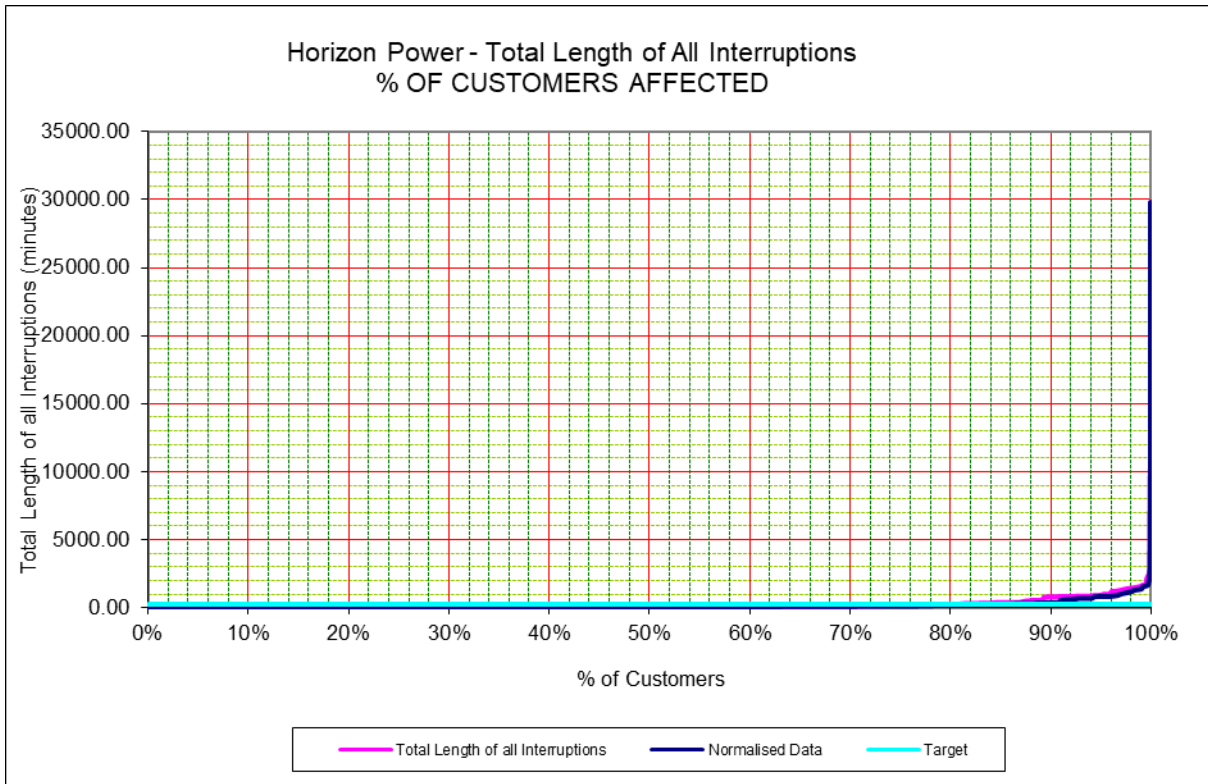


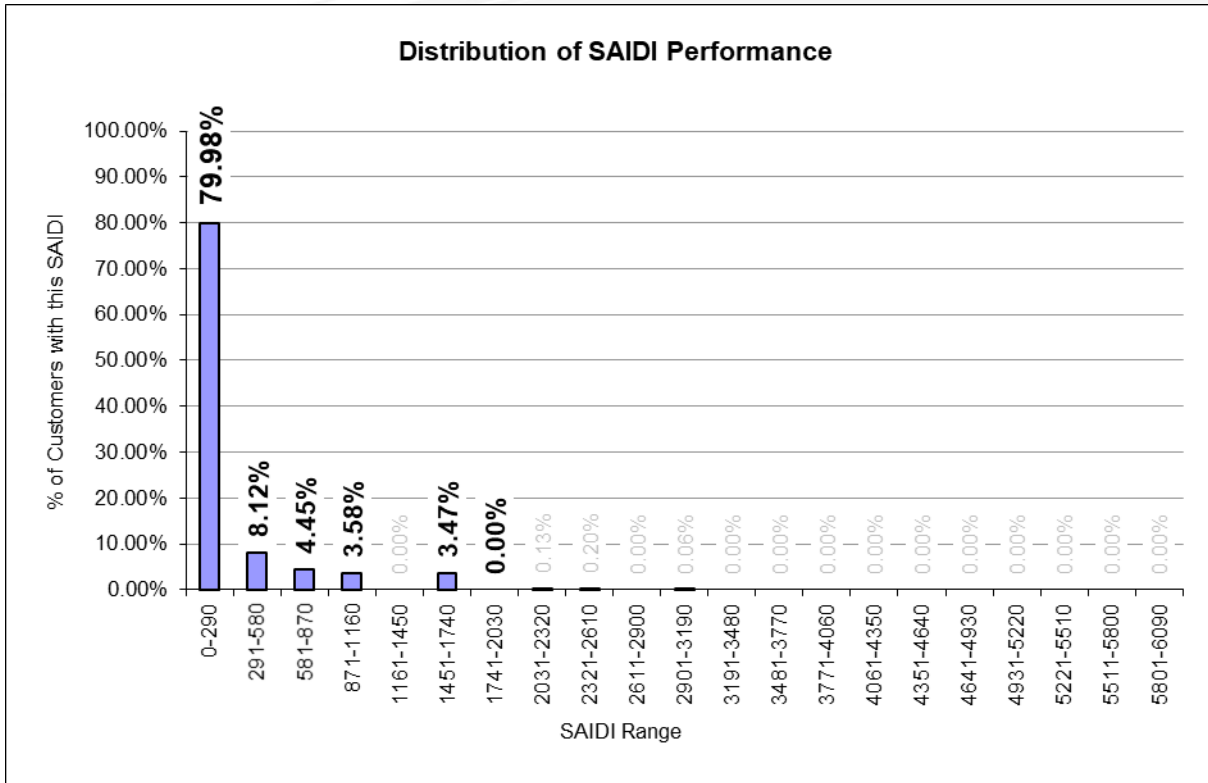
During the period 01/07/2018 to 30/06/2019, 99.91% of customers experienced an average of less than 16 outages or less.

Clause 14(c) - Horizon Power - Total Length of all Interruptions - Frequency Distribution

Percentile	Minutes
25 th	< 17.80
50 th	< 88.65
75 th	< 228.94
90 th	< 824.29
95 th	< 956.25
98 th	< 1463.16
100 th	< 29795.76

Clause 15 – Total Length of all Interruptions - Frequency Graph





During the period 01/07/2018 to 30/06/2019, 79% of customers experienced outages with durations of less than 290 minutes.

4. MAJOR EVENT DAYS

In the period 01/07/2018 to 30/06/2019 there was 1 system impacted by 1 significant event for which Major Event Days were recorded.

System	Major Event Days	Event
Leonora	9 December 2018	Cyclonic Rated Storms

5. APPENDIX

Major Event Days

Major event days are days in which interruptions affect the delivery of supply in a system and are not reasonably practicable to control such as extreme weather events (cyclones, fires and floods). These days are excluded from Sustained Interruptions used for reliability measurement and reporting.

This report makes reference to the impact of major event days where they have had a significant impact on the statistics.

Major Event Day Classification

The classification of Major Event Days is to allow major events to be studied separately from daily operation, and in the process, to better reveal trends in daily operation that would be hidden by the large statistical effect of major events.

A Major Event Day is a day in which interruptions affect the delivery of supply in a system that is not reasonably practicable to control. All indices are calculated based on removal of the identified Major Event Days.

Interruptions that span multiple days are accrued to the day on which the interruption begins.

Normalised Data Set - Unplanned

Horizon Power uses Normalised data set to measure the management of incidents that are within the business' control.

Sustained Interruptions in Horizon Powers systems are those interruptions that result in a loss of electricity to customers for more than one minute in duration.

Horizon Power's Normalised Data excludes interruptions where the interruption is not reasonably practicable to control such as:

- Customer installations/ appliances
- Planned outages/ disconnections
- Vehicle, machine or tool damage
- Wilful damage
- Damage due to events that Horizon Power cannot, so far as is reasonably practicable, control such as cyclones, fires and floods.

As Horizon Power is a vertically integrated business (responsible for generation, transmission and distribution) reliability data includes generation and transmission outages.